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Indian Standard

SPECIFICATION FOR MALATHION WATER DISPERSIBLE POWDER CONCENTRATES

(Second Revision)

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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Indian Standard

SPECIFICATION FOR MALATHION WATER DISPERSIBLE POWDER CONCENTRATES

(Second Revision)

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AMENDMENT NO. 1 NOVEMBER 1979
TO
IS : 2569-1978 SPECIFICATION FOR MALATHION WATER DISPERSIBLE POWDER CONCENTRATES

(*Second Revision*)

Alteration

[*Page* 4, *Table* 1, *Sl No.* (v)] —Substitute the following for the existing matter under respective columns:

(1)	(2)	(3)	(4)	(5)
v)	Acidity (as H_2SO_4), percent by mass, *Max*	0·2	—	11.3.2
	OR			
	Alkalinity (as NaOH), percent by mass, *Max*	0·1	—	11.3.3

Addendum

(*Page* 6, *clause* 5.1.2) — Add the following new clause after **5.1.2**:

' **5.1.3** For determination of suspensibility after accelerated storage, dilute the 1/10th portion left to 250 ml with anhydrous ethyl alcohol. Stopper and shake vigorously for 2 minutes to effect complete solution. Allow to stand for 15 minutes. Transfer a 10 ml aliquot to 100-ml volumetric flask and dilute to mark with anhydrous ethyl alcohol and mix. Allow the solid material if any, to settle and transfer a suitable aliquot of the clear solution to a separating funnel. Add sufficient anhydrous ethyl alcohol to make a total volume of 25 ml and proceed for determination of malathion content. '

(AFCDC 6)

AMENDMENT NO. 2 MARCH 1981

TO

IS : 2569 - 1978 SPECIFICATION FOR MALATHION WATER DISPERSIBLE POWDER CONCENTRATES

(Second Revision)

Alterations

[*Page* 4, *Table* 1, *Sl No.* (ii) *and* (iv)] — Substitute the following for the existing matter:

Sl No.	Characteristic	Requirement	Method of Test, Ref to		
			Cl No. and Appendix of this Standard	Appendix of IS : 1832-1978*	Cl No. of IS : 6940-1973†
(1)	(2)	(3)	(4)	(5)	(6)
ii)	Malathion content after accelerated storage for 20 h at 90°C	Shall not be less than 88 percent of the initial value	5·2	—	—
iv)	Suspensibility after accelerated storage for 20 h at 90°C, percent by mass, *Min*	50	A	—	—

(*Page* 5, *clauses* 2.2.1 *and* 2.2.1.1) — Substitute the following for the existing matter:

'2.2.1 *Malathion Content* — When determined by the methods prescribed in Appendix A of IS : 1832-1978*, the observed malathion content shall not differ from the declared nominal value by more than appropriate tolerance indicated below:

Nominal Value, Percent	*Tolerance*	
Up to 9	+ 10 − 5	Percent of the nominal value
Above 9 and below 50	± 5	
50 and above	+ 5 − 3	

2.2.1.1 The actual value of the malathion content in the formulations shall be calculated to the second decimal place and then rounded off to first decimal place before applying the tolerances given in **2.2.1**.

2.2.1.2 The average content of all samples taken shall not be lower than the nominal content.'

(*Page* 6, *clause* **5.1.2**) — Delete.

Addenda

(*Page* 6, *clause* **5.1.1**) — Add the following new clause after **5.1.1**:

'**5.2 Accelerated Storage Treatment**

5.2.1 Weigh 20 g of the powder into a 100 ml wide mouthed glass bottle fitted with a vinyl-plastic-lined screw cap. Place in a forced draught oven maintained at 90°C ± 2°C. Allow the sample to remain in the oven for 20 hours and then cool to room temperature before removing the cap. After accelerated storage treatment, the sample should not be exposed to heat, bright-sunshine, or high atmospheric humidity. Proceed as per **5.1.1** for determination of malathion content.'

(*Page* 6, *clause* **5.2**):

a) Renumber the existing clause as **5.3**.

b) Add the following Appendix A after **5.3**:

'APPENDIX A

SUSPENSIBILITY

[*Table* 1, *Sl No.* (iv)]

A-1. APPARATUS

A-1.1 Graduated Cylinder — 100-ml capacity having the 100-ml mark situated at 18·0 cm ± 1·5 cm from the bottom.

A-1.2 Pipette — 25-ml capacity fitted with a device (for example a rubber stopper with a vent in the side) to permit its insertion into the 100-ml cylinder so that it is held with the top exactly at the 50-ml mark.

A-1.3 Water Bath — Water-bath maintained at 30 ± 1°C into which the 100-ml graduated cylinder can be immersed to the 100-ml mark. The bath must be free from any vibration caused by stirring motors or other equipment.

A-1.4 Glass Fibre Filter Paper

A-2. REAGENTS

A-2.1 Standard Hard Water — Dissolve 0·304 g of anhydrous calcium chloride and 0·139 g of magnesium chloride hexahydrate in distilled water and make up to one litre. This provides water with a hardness of 342 mg/l, calculated as calcium carbonate.

A-2.2 Potassium Bromide

A-3. PROCEDURE

A-3.1 Weigh accurately into a 100 ml beaker an amount of the treated sample (*see* 5.2) to form 100 ml of a suspension containing 2·5 percent of malathion (m/v). Add 50 ml of water at 30°C ± 1°C. Stir the mixture with a glass rod by hand for 30 seconds, making no deliberate attempt to break up any lumps, and then immediately transfer the sample quantitatively to the 100-ml cylinder using additional water for the transfer. Add sufficient water at 30°C ± 1°C to make 100 ml of suspension. Stopper the cylinder and mix by inverting and righting it 30 times at the rate of approximately one cycle every two seconds. This operation should be carried out as smoothly as possible keeping the axis of rotation fixed. The cylinder must be thermally insulated from the hands to maintain the prescribed temperature of the suspension. Immerse the cylinder up to the 100-ml mark in the water-bath maintained at 30°C ± 1°C. The preparation of the suspension, from the first addition of water to the placing of the cylinder in the constant-temperature bath, should be continuous operation and should be completed within 3 minutes. Allow the cylinder to stand for 30 minutes in the water-bath at 30°C ± 1°C. During this period care should be taken that the bath and cylinder are free from vibrations.

> Note — Should excessive flocculation occur during the test, the material shall be deemed unsatisfactory. Excessive flocculation in this context means either curdling up of the suspension in the entire column or the appearance of the transparent liquid accompanied by total or partial curdling up.

A-3.2 At the end of the 30-minute settling period, remove the cylinder from the water-bath, insert the specially fitted pipette so that the tip is exactly at the 50-ml mark and remove a 25-ml aliquot.

A-3.3 Transfer the 25-ml aliquot to a 100-ml beaker and add 2 g of potassium bromide. Allow to stand for about 5 minutes to permit the powder to coagulate. Place a 5·5-cm glass-fibre filter paper in a 5·5 cm Buchner funnel, insert the funnel in a 250-ml suction flask, and wet the paper with water. Transfer the coagulated 25-ml aliquot to the paper and wash with six 20-ml portions of water. Transfer the funnel to a dry 250-ml suction flask and extract the malathion with six 20-ml portions of acetone. Evaporate the acetone in the flask in a steam-bath to a volume of approximately 10 ml.

A-3.4 Transfer the residue quantitatively to a tared 50-ml beaker, using additional acetone. Evaporate the acetone at 60°C in a stream of dry air. Add two 5-ml portions of propan-2-ol during the evaporation to remove traces of water. Dry the sample in an oven at 55°C for 20 minutes and weigh as malathion.

A-3.5 Calculation

Suspensibility after accelerated storage, percent by mass = $m \times 160$

where

m = mass, in g, of malathion in 25 ml aliquot (*see* A-3.4)

(AFCDC 6)

AMENDMENT NO. 3 SEPTEMBER 1988
TO
IS : 2569 - 1978 SPECIFICATION FOR MALATHION WATER DISPERSIBLE POWDER CONCENTRATES

(Second Revision)

(*Page* 4, *Table* 1) — Add the following note at the end of table :

'NOTE — The material shall not be subjected to accelerated storage treatment if it has crossed half of its shelf life as ascertained from its date of manufacture and date of expiry declared on the container.'

(AFCDC 6)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 4 APRIL 2001
TO
IS 2569 : 1978 SPECIFICATION FOR MALATHION WATER DISPERSIBLE POWDER CONCENTRATES

(Second Revision)

[*Page* 4, *Table* 1, *Sl No.* (iii), *col* 2] — Delete the words 'after accelerated storage'.

[*Page* 4, *Table* 1 (*see also Amendment No.* 2)]:

a) *Sl No.* (ii) — Delete.

b) *Sl No.* (iv), *col* 2 — Delete the words 'after accelerated storage for 20 h at 90°C'.

(FAD 1)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR MALATHION WATER DISPERSIBLE POWDER CONCENTRATES

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 15 February 1978, after the draft finalized by the Pest Control Sectional Committee had been approved by the Agricultural and Food Products Division Council and the Chemical Division Council.

0.2 This standard was first published in 1963. This was revised in 1973 mainly in respect of tolerances as applicable to various concentrations of the product and requirements of alkalinity. Subsequently two amendments were issued and these have been included in this revision. The second revision also incorporates the modified requirements pertaining to description, packaging and cautionary notice. For estimation of active ingredient a reference has been given to Appendix A of IS : 1832-1978* in which an additional test method has been incorporated.

0.3 Malathion water dispersible powder concentrates are largely used in the control of pests of agriculture, public health and veterinary importance.

0.4 Malathion water dispersible powder formulation is generally manufactured to contain 25 percent (*m/m*) malathion content.

0.5 In the preparation of this standard, due consideration has been given to the provisions of the Insecticides Act, 1968 and the rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for malathion water dispersible powder concentrates.

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*Specification for malathion, technical (*first revision*).

†Rules for rounding off numerical values (*revised*).

2. REQUIREMENTS

2.1 Description — The material shall be in the form of a fine and free flowing homogeneous powder. The material shall be free from visible extraneous matter and hard aggregates and shall wet readily on stirring with water, providing a suspension suitable for use as a spray.

2.1.1 Malathion, technical employed in the manufacture of this material shall conform to IS : 1832-1978*.

2.2 The material shall also comply with the requirements given in Table 1.

TABLE 1 REQUIREMENTS FOR MALATHION WATER DISPERSIBLE POWDER CONCENTRATES

(*Clauses* 2.2 *and* 5.1)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Appendix of IS : 1832-1978*	Cl No. of IS : 6940-1973†
(1)	(2)	(3)	(4)	(5)
i)	Malathion content, percent by mass	Nominal value as declared on the container (*see* **2.2.1**)	A	—
ii)	High temperature stability (heat stability) after storage for 20 hours at 90°C	Malathion content shall be not less than 88 percent of the initial value	—	13.4
iii)	Material passing through 75-micron IS Sieve‡ after accelerated storage, percent by mass, *Min*	97	—	11.1
iv)	Suspensibility after accelerated storage, percent by mass, *Min*	50	—	11.2
v)	Acidity (as H_2SO_4) percent by mass, *Max*	0·2	—	11.3

*Specification for malathion, technical (*first revision*).

†Methods of tests for pesticides and their formulations.

‡*See* IS : 460-1962 Specification for test sieves (*revised*). BS test sieve 200, ASTM test sieve 200, Tyler test sieve 200 have their apertures within the limits specified for the above IS test sieve and may, therefore, be used as 75-micron IS sieve.

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*Specification for malathion, technical (*first revision*).

2.2.1 *Malathion Content* — When determined by the methods prescribed in Appendix A of IS : 1832-1978*, the observed malathion content shall not differ from the declared nominal value by more than appropriate tolerances indicated below:

Nominal Value	*Tolerance of the Nominal Value, Percentage*
Up to 9	+ 10 − 5
10 and below 50	± 5
50 and above	+ 5 − 3

2.2.1.1 The actual value of the malathion content in the formulations shall be calculated to the second decimal place and then rounded off to first decimal place before applying the tolerances given in **2.2.1**.

3. PACKING AND MARKING

3.1 Packing — The material shall be packed according to IS : 8190 (Part I)-1976†.

3.2 Marking — The container shall bear legibly and indelibly the following information and any other additional information as is necessary under the Insecticides Act and Rules.

a) Name of the material;

b) Name of the manufacturer;

c) Date of manufacture;

d) Batch number;

e) Net mass of contents;

f) Nominal malathion content, percent (*m/m*); and

g) The minimum cautionary notice as worded in Insecticides Act and Rules.

3.2.1 Each container may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

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*Specification for malathion, technical (*first revision*).

†Requirements for packing of pesticides : Part I Solid pesticides.

4. SAMPLING

4.1 Representative samples of the material shall be drawn as prescribed in 'Indian Standard methods for sampling of pesticides and their formulations' (*under preparation*).

NOTE — Till such time the standard under preparation is published, the matter shall be as agreed to between the parties concerned.

5. TESTS

5.1 Tests shall be carried out by the methods as prescribed in col 4 and 5 of Table 1.

5.1.1 For estimation of malathion content, start with a sample containing 0·15 ± 0·05 g of malathion into a 250 ml beaker. Add 50 ml of cyclohexane and stir for 20 minutes using a magnetic stirrer. Filter under reduced pressure and wash the insoluble residue on the filter paper with three 10-ml portions of cyclohexane; retaining the filtrate and washings. Transfer quantitatively to a 100-ml volumetric flask, make up to the mark with cyclohexane, and mix. Proceed with 10 ml of the aliquot for determining malathion content as prescribed in Appendix A of IS : 1832-1978*.

5.1.2 For high temperature stability (heat stability) test start with 20 g of the material and keep it at 90° ± 2°C for 20 hours. At the end of the heating period, allow the material to cool and a suitable quantity of this be taken for determining malathion content.

5.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977†) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

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*Specification for malathion, technical (*first revision*).

†Specification for water, for general laboratory use (*second revision*).

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